General

Guideline Title

Feverish illness in children: assessment and initial management in children younger than 5 years.

Bibliographic Source(s)

National Collaborating Centre for Women's and Children's Health. Feverish illness in children: assessment and initial management in children younger than 5 years. London (UK): National Institute for Health and Care Excellence (NICE); 2013 May. 43 p. (Clinical guideline; no. 160).

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: National Collaborating Centre for Women's and Children's Health. Feverish illness in children: assessment and initial management in children younger than 5 years. London (UK): National Institute for Health and Clinical Excellence (NICE); 2007 May. 142 p. (Clinical guideline; no. 47). [289 references]

Recommendations

Major Recommendations

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Collaborating Centre for Women's and Children's Health (NCC-WCH) on behalf of the National Institute for Health and Care Excellence (NICE) (see the "Availability of Companion Documents" field for the full version of this guidance).

The wording used in the recommendations in this guideline denotes the certainty with which the recommendation is made (the strength of the recommendation).

Recommendations are marked as [2007], [2007, amended 2013], [2013] or [new 2013]:

- [2007] indicates that the evidence has not been updated and reviewed since 2007
- [2007, amended 2013] indicates that the evidence has not been updated and reviewed since 2004, but a small amendment has been made to the recommendation
- [2013] indicates that the evidence has been reviewed but no changes have been made to the recommendation
- [new 2013] indicates that the evidence has been reviewed and the recommendation has been updated or added

Thermometers and the Detection of Fever

Oral and Rectal Temperature Measurements

Do not routinely use the oral and rectal routes to measure the body temperature of children aged 0–5 years. [2007]

Measurement of Body Temperature at Other Sites

In infants under the age of 4 weeks, measure body temperature with an electronic thermometer in the axilla. [2007]

In children aged 4 weeks to 5 years, measure body temperature by one of the following methods:

- Electronic thermometer in the axilla
- Chemical dot thermometer in the axilla
- Infra-red tympanic thermometer [2007]

Healthcare professionals who routinely use disposable chemical dot thermometers should consider using an alternative type of thermometer when multiple temperature measurements are required. [2007]

Forehead chemical thermometers are unreliable and should not be used by healthcare professionals. [2007]

Subjective Detection of Fever by Parents and Carers

Reported parental perception of a fever should be considered valid and taken seriously by healthcare professionals. [2007]

Clinical Assessment of Children with Fever

Life-threatening Features of Illness in Children

First, healthcare professionals should identify any immediately life-threatening features, including compromise of the airway, breathing or circulation, and decreased level of consciousness. [2007]

Assessment of Risk of Serious Illness

Assess children with feverish illness for the presence or absence of symptoms and signs that can be used to predict the risk of serious illness using the traffic light system (see Table 1, below). [2013]

When assessing children with learning disabilities, take the individual child's learning disability into account when interpreting the traffic light table. [new 2013]

Recognise that children with any of the following symptoms or signs are in a high-risk group for serious illness:

- Pale/mottled/ashen/blue skin, lips or tongue
- No response to social cues (a child's response to social interaction with a parent or healthcare professional, such as response to their name, smiling and/or giggling)
- Appearing ill to a healthcare professional
- Does not wake or if roused does not stay awake
- Weak, high-pitched or continuous cry
- Grunting
- Respiratory rate greater than 60 breaths per minute
- Moderate or severe chest indrawing
- Reduced skin turgor
- Bulging fontanelle [new 2013]

Recognise that children with any of the following symptoms or signs are in at least an intermediate-risk group for serious illness:

- Pallor of skin, lips or tongue reported by parent or carer
- Not responding normally to social cues (a child's response to social interaction with a parent or healthcare professional, such as response to their name, smiling and/or giggling)
- No smile
- Wakes only with prolonged stimulation
- Decreased activity
- Nasal flaring
- Dry mucous membranes
- Poor feeding in infants
- Reduced urine output

- Rigors [new 2013]

Recognise that children who have all of the following features, and none of the high- or intermediate-risk features, are in a low-risk group for serious illness:

- Normal colour of skin, lips and tongue
- Responds normally to social cues (a child's response to social interaction with a parent or healthcare professional, such as response to their name, smiling and/or giggling)
- Content/smiles
- Stays awake or awakens quickly
- Strong normal cry or not crying
- Normal skin and eyes
- Moist mucous membranes [new 2013]

Measure and record temperature, heart rate, respiratory rate and capillary refill time as part of the routine assessment of a child with fever. [2007]

Recognise that a capillary refill time of 3 seconds or longer is an intermediate-risk group marker for serious illness ('amber' sign). [2013]

Measure the blood pressure of children with fever if the heart rate or capillary refill time is abnormal and the facilities to measure blood pressure are available. [2007]

In children older than 6 months do not use height of body temperature alone to identify those with serious illness. [2013]

Recognise that children younger than 3 months with a temperature of 38°C or higher are in a high-risk group for serious illness. [2013]

Recognise that children aged 3–6 months with a temperature of 39°C or higher are in at least an intermediate-risk group for serious illness. [new 2013]

Do not use duration of fever to predict the likelihood of serious illness. However, children with a fever lasting more than 5 days should be assessed for Kawasaki disease (see last recommendation below under the section "Symptoms and Signs of Specific Illness"). [new 2013]

Recognise that children with tachycardia are in at least an intermediate-risk group for serious illness. Use the Advanced Paediatric Life Support (APLS)* criteria below to define tachycardia: [new 2013]

Age	Heart Rate (bpm)
<12 months	>160
12–24 months	>150
2–5 years	>140

bpm = beats per minute

*Advanced Life Support Group (2004) Advanced paediatric life support: the practical approach (4th edn). Wiley-Blackwell.

Assess children with fever for signs of dehydration. Look for:

- Prolonged capillary refill time
- Abnormal skin turgor
- Abnormal respiratory pattern
- Weak pulse
- Cool extremities [2007]

Symptoms and Signs of Specific Illnesses

Look for a source of fever and check for the presence of symptoms and signs that are associated with specific diseases (see Table 2, below). [2007]

Consider meningococcal disease in any child with fever and a non-blanching rash, particularly if any of the following features are present (see the NICE guideline, Bacterial meningitis and meningococcal septicaemia. Management of bacterial meningitis and meningococcal septicaemia in children and young people younger than 16 years in primary and secondary care [NICE clinical guideline 102]):

- An ill-looking child
- Lesions larger than 2 mm in diameter (purpura)
- A capillary refill time of 3 seconds or longer
- Neck stiffness [2007]

Consider bacterial meningitis in a child with fever and any of the following features (see the NICE guideline, Bacterial meningitis and meningococcal septicaemia. Management of bacterial meningitis and meningococcal septicaemia in children and young people younger than 16 years in primary and secondary care [NICE clinical guideline 102]):

- Neck stiffness
- Bulging fontanelle
- Decreased level of consciousness
- Convulsive status epilepticus [2007, amended 2013]

Be aware that classic signs of meningitis (neck stiffness, bulging fontanelle, high-pitched cry) are often absent in infants with bacterial meningitis (see the NICE guideline, Bacterial meningitis and meningococcal septicaemia. Management of bacterial meningitis and meningococcal septicaemia in children and young people younger than 16 years in primary and secondary care [NICE clinical guideline 102]). [2007]

Consider herpes simplex encephalitis in children with fever and any of the following features:

- Focal neurological signs
- Focal seizures
- Decreased level of consciousness [2007]

Consider pneumonia in children with fever and any of the following signs:

- Tachypnoea (respiratory rate greater than 60 breaths per minute, age 0–5 months; greater than 50 breaths per minute, age 6–12 months; greater than 40 breaths per minute, age older than 12 months)
- Crackles in the chest
- Nasal flaring
- Chest indrawing
- Cyanosis
- Oxygen saturation of 95% or less when breathing air [2007]

Consider urinary tract infection in any child younger than 3 months with fever (see the NICE guideline Urinary tract infection in children [NICE clinical guideline 54]). [2007]

Consider urinary tract infection in a child aged 3 months or older with fever and 1 or more of the following (see the NICE guideline Urinary tract infection in children [NICE clinical guideline 54]):

- Vomiting
- Poor feeding
- Lethargy
- Irritability
- Abdominal pain or tenderness
- Urinary frequency or dysuria [new 2013]

Consider septic arthritis/osteomyelitis in children with fever and any of the following signs:

- Swelling of a limb or joint
- Not using an extremity
- Non-weight bearing [2007]

Consider Kawasaki disease in children with fever that has lasted longer than 5 days and who have 4 of the following 5 features:

- Bilateral conjunctival injection
- Change in mucous membranes in the upper respiratory tract (for example, injected pharynx, dry cracked lips or strawberry tongue)
- Change in the extremities (for example, oedema, erythema or desquamation)
- Polymorphous rash

- Cervical lymphadenopathy
- Be aware that, in rare cases, incomplete/atypical Kawasaki disease may be diagnosed with fewer features [2007]

Imported Infections

When assessing a child with feverish illness, enquire about recent travel abroad and consider the possibility of imported infections according to the region visited. [2007]

Table 1. Traffic Light System for Identifying Risk of Serious Illness [new 2013]

Children with fever and any of the symptoms or signs in the red column should be recognised as being at high risk. Similarly, children with fever and any of the symptoms or signs in the amber column and none in the red column should be recognised as being at intermediate risk. Children with symptoms and signs in the green column and none in the amber or red columns are at low risk. The management of children with fever should be directed by the level of risk.

This traffic light table should be used in conjunction with the recommendations in this guideline on investigations and initial management in children with fever.

A colour version of this table is available (see the "Availability of Companion Documents" field).

	Green – Low Risk	Amber – Intermediate Risk	Red – High Risk
Colour (of skin, lips or tongue)	• Normal colour	• Pallor reported by parent/carer	• Pale/mottled/ashen/blue
Activity	• Responds normally to social cues • Content/smiles • Stays awake or awakens quickly • Strong normal cry/not crying	• Not responding normally to social cues • No smile • Wakes only with prolonged stimulation • Decreased activity	• No response to social cues • Appears ill to a healthcare professional • Does not wake or if roused does not stay awake • Weak, high-pitched or continuous cry

Respiratory		• Nasal flaring
		• Tachypnoea:
		  • >50 breaths/ minute, age 6–12 months
		  • >40 breaths/ minutes, age >12 months
		• Oxygen saturation ≤95% in air
		• Crackles in the chest
			• Grunting
			• Tachypnoea: Respiratory rate >60 breaths/minute
			• Moderate or severe chest indrawing

Circulation and Hydration	• Normal skin and eyes
	• Moist mucous membranes
		• Tachycardia:
		  • >160 beats/ minute, age <12 months
		  • >150 beats/ minute, age 12–24 months
		  • >140 beats/ minute, age 2–5 years
		• Capillary refill time ≥3 seconds
		• Dry mucous membranes
		• Poor feeding in infants
		• Reduced urine output
			• Reduced skin turgor

Other	• None of the amber or red symptoms or signs	• Age 3–6 months, temperature ≥39°C • Fever for ≥5 days • Rigors • Swelling of a limb or joint • Non-weight bearing limb/not	• Age <3 months, temperature ≥38°C • Non-blanching rash • Bulging fontanelle • Neck stiffness • Status epilepticus

	Green – Low Risk	Amber – Intermediate Risk	Red – High Risk
		using an extremity	• Focal neurological signs • Focal seizures

Table 2. Summary Table for Symptoms and Signs Suggestive of Specific Diseases [2013]

Diagnosis to be Considered	Symptoms and Signs in Conjunction with Fever
Meningococcal disease	Non-blanching rash, particularly with 1 or more of the following: • An ill-looking child • Lesions larger than 2 mm in diameter (purpura) • Capillary refill time of ≥3 seconds • Neck stiffness
Bacterial meningitis	Neck stiffness Bulging fontanelle Decreased level of consciousness Convulsive status epilepticus
Herpes simplex encephalitis	Focal neurological signs Focal seizures Decreased level of consciousness
Pneumonia	Tachypnoea (respiratory rate >60 breaths/minute, age 0–5 months; >50 breaths/minute, age 6–12 months; >40 breaths/minute, age >12 months) Crackles in the chest Nasal flaring Chest indrawing Cyanosis Oxygen saturation ≤95%
Urinary tract infection	Vomiting Poor feeding Lethargy Irritability Abdominal pain or tenderness Urinary frequency or dysuria
Septic arthritis	Swelling of a limb or joint Not using an extremity Non-weight bearing
Kawasaki disease	Fever for more than 5 days and at least 4 of the following: • Bilateral conjunctival injection • Change in mucous membranes • Change in the extremities

Diagnosis to be Considered	Symptoms and Signs in Conjunction with Fever
	• Polymorphous rash • Cervical lymphadenopathy

Management by Remote Assessment

Remote assessment refers to situations in which a child is assessed by a healthcare professional who is unable to examine the child because the child is geographically remote from the assessor (for example, telephone calls to National Health Service [NHS] Direct [please note that this service will be replaced by NHS 111, which is due to be implemented nationally in 2013]). Therefore, assessment is largely an interpretation of symptoms rather than physical signs. The guidance in this section may also apply to healthcare professionals whose scope of practice does not include the physical examination of a young child (for example, community pharmacists).

Management According to Risk of Serious Illness

Healthcare professionals performing a remote assessment of a child with fever should seek to identify symptoms and signs of serious illness and specific diseases as described in the previous section "Clinical assessment of children with fever" and summarised in Tables 1 and 2, above. [2007]

Children whose symptoms or combination of symptoms suggest an immediately life-threatening illness should be referred immediately for emergency medical care by the most appropriate means of transport (usually 999 ambulance). [2007]

Children with any 'red' features but who are not considered to have an immediately life-threatening illness should be urgently assessed by a healthcare professional in a face-to-face setting within 2 hours. [2007]

Children with 'amber' but no 'red' features should be assessed by a healthcare professional in a face-to-face setting. The urgency of this assessment should be determined by the clinical judgement of the healthcare professional carrying out the remote assessment. [2007]

Children with 'green' features and none of the 'amber' or 'red' features can be cared for at home with appropriate advice for parents and carers, including advice on when to seek further attention from the healthcare services (see "Advice for home care" section below). [2007, amended 2013]

Management by the Non-Paediatric Practitioner

In this guideline, a non-paediatric practitioner is defined as a healthcare professional who has not had specific training or who does not have expertise in the assessment and treatment of children and their illnesses. This term includes healthcare professionals working in primary care, but it may also apply to many healthcare professionals in general emergency departments.

Clinical Assessment

Management by a non-paediatric practitioner should start with a clinical assessment as described in the section "Clinical assessment of children with fever" above. Healthcare practitioners should attempt to identify symptoms and signs of serious illness and specific diseases as summarised in Tables 1 and 2, above. [2007]

Management According to Risk of Serious Illness

Children whose symptoms or combination of symptoms and signs suggest an immediately life-threatening illness (see the recommendation in the section "Life-threatening features of illness in children") should be referred immediately for emergency medical care by the most appropriate means of transport (usually 999 ambulance). [2007]

Children with any 'red' features but who are not considered to have an immediately life-threatening illness should be referred urgently to the care of a paediatric specialist. [2007]

If any 'amber' features are present and no diagnosis has been reached, provide parents or carers with a 'safety net' or refer to specialist paediatric care for further assessment. The safety net should be 1 or more of the following:

- Providing the parent or carer with verbal and/or written information on warning symptoms and how further healthcare can be accessed (see "When to Seek Further Help" below).
- Arranging further follow-up at a specified time and place
- Liaising with other healthcare professionals, including out-of-hours providers, to ensure direct access for the child if further assessment is required [2007]

Children with 'green' features and none of the 'amber' or 'red' features can be cared for at home with appropriate advice for parents and carers,

including advice on when to seek further attention from the healthcare services (see "Advice for home care" below). [2007, amended 2013]

Tests by the Non-Paediatric Practitioner

Children with symptoms and signs suggesting pneumonia who are not admitted to hospital should not routinely have a chest X-ray. [2007]

Test urine in children with fever as recommended (see the NICE guideline Urinary tract infection in children [NICE clinical guideline 54]). [2007]

Use of Antibiotics by the Non-Paediatric Practitioner

Do not prescribe oral antibiotics to children with fever without apparent source. [2007]

Give parenteral antibiotics to children with suspected meningococcal disease at the earliest opportunity (either benzylpenicillin or a third-generation cephalosporin) (see the NICE guideline, Bacterial meningitis and meningococcal septicaemia. Management of bacterial meningitis and meningococcal septicaemia in children and young people younger than 16 years in primary and secondary care [NICE clinical guideline 102]) [2007]

Management by the Paediatric Specialist

In this guideline, the term paediatric specialist refers to a healthcare professional who has had specific training or has recognised expertise in the assessment and treatment of children and their illnesses. Examples include paediatricians, or healthcare professionals working in children's emergency departments.

Children Younger Than 5 Years

Management by the paediatric specialist should start with a clinical assessment as described in the section, "Clinical assessment of children with fever" above. The healthcare professional should attempt to identify symptoms and signs of serious illness and specific diseases as summarised in Tables 1 and 2, above. [2007]

Children Younger Than 3 Months

Infants younger than 3 months with fever should be observed and have the following vital signs measured and recorded:

- Temperature
- Heart rate
- Respiratory rate [2007]

Perform the following investigations in infants younger than 3 months with fever:

- Full blood count
- Blood culture
- C-reactive protein
- Urine testing for urinary tract infection (see the NICE guideline Urinary tract infection in children [NICE clinical guideline 54])
- Chest X-ray only if respiratory signs are present
- Stool culture, if diarrhoea is present [2013]

Perform lumbar puncture in the following children with fever (unless contraindicated):

- Infants younger than 1 month
- All infants aged 1–3 months who appear unwell
- Infants aged 1–3 months with a white blood cell count (WBC) less than 5×10^9/litre or greater than 15×10^9/litre [2007, amended 2013]

When indicated, perform a lumbar puncture without delay and, whenever possible, before the administration of antibiotics. [2007]

Give parenteral antibiotics to:

- Infants younger than 1 month with fever
- All infants aged 1–3 months with fever who appear unwell
- Infants aged 1–3 months with WBC less than 5×10^9/litre or greater than 15×10^9/litre [2007, amended 2013]

When parenteral antibiotics are indicated for infants younger than 3 months of age, a third-generation cephalosporin (for example cefotaxime or ceftriaxone) should be given plus an antibiotic active against listeria (for example, ampicillin or amoxicillin). [2007]

Children Aged 3 Months or Older

Perform the following investigations in children with fever without apparent source who present to paediatric specialists with 1 or more 'red' features:

- Full blood count
- Blood culture
- C-reactive protein
- Urine testing for urinary tract infection (see the NICE guideline Urinary tract infection in children [NICE clinical guideline 54]) [2013]

The following investigations should also be considered in children with 'red' features, as guided by the clinical assessment:

- Lumbar puncture in children of all ages (if not contraindicated)
- Chest X-ray irrespective of body temperature, and
- WBC serum electrolytes and blood gas [2007]

Children with fever without apparent source presenting to paediatric specialists who have 1 or more 'amber' features, should have the following investigations performed unless deemed unnecessary by an experienced paediatrician.

- Urine should be collected and tested for urinary tract infection (see the NICE guideline Urinary tract infection in children [NICE clinical guideline 54])
- Blood tests: full blood count, C-reactive protein and blood cultures
- Lumbar puncture should be considered for children younger than 1 year
- Chest X-ray in a child with a fever greater than 39°C and WBC greater than 20×10^9/litre [2007]

Children who have been referred to a paediatric specialist with fever without apparent source and who have no features of serious illness (that is, the 'green' group), should have urine tested for urinary tract infection (see the NICE guideline Urinary tract infection in children [NICE clinical guideline 54]) and be assessed for symptoms and signs of pneumonia (see Table 2, above). [2007]

Do not routinely perform blood tests and chest X-rays in children with fever who have no features of serious illness (that is, the 'green' group). [2007]

Viral Co-infection

Febrile children with proven respiratory syncytial virus or influenza infection should be assessed for features of serious illness. Consideration should be given to urine testing for urinary tract infection (see the NICE guideline Urinary tract infection in children [NICE clinical guideline 54]) [2007]

Observation in Hospital

In children aged 3 months or older with fever without apparent source, a period of observation in hospital (with or without investigations) should be considered as part of the assessment to help differentiate non-serious from serious illness. [2007]

When a child has been given antipyretics, do not rely on a decrease or lack of decrease in temperature at 1–2 hours to differentiate between serious and non-serious illness. Nevertheless, in order to detect possible clinical deterioration, all children in hospital with 'amber' or 'red' features should still be reassessed after 1–2 hours. [new 2013]

Immediate Treatment by the Paediatric Specialist (For Children of all Ages)

Children with fever and shock presenting to specialist paediatric care or an emergency department should be:

- Given an immediate intravenous fluid bolus of 20 ml/kg; the initial fluid should normally be 0.9% sodium chloride
- Actively monitored and given further fluid boluses as necessary [2007]

Give immediate parenteral antibiotics to children with fever presenting to specialist paediatric care or an emergency department if they are:

- Shocked
- Unrousable
- Showing signs of meningococcal disease [2007]

Immediate parenteral antibiotics should be considered for children with fever and reduced levels of consciousness. In these cases symptoms and signs of meningitis and herpes simplex encephalitis should be sought (see the NICE guideline Urinary tract infection in children [NICE clinical guideline 54] and Table 2 above). [2007]

When parenteral antibiotics are indicated, a third-generation cephalosporin (for example, cefotaxime or ceftriaxone) should be given, until culture results are available. For children younger than 3 months, an antibiotic active against listeria (for example, ampicillin or amoxicillin) should also be given. [2007]

Give intravenous aciclovir to children with fever and symptoms and signs suggestive of herpes simplex encephalitis (see the recommendation above under the section "Symptoms and signs of specific illness"). [2007]

Oxygen should be given to children with fever who have signs of shock or oxygen saturation (SpO_2) of less than 92% when breathing air. Treatment with oxygen should also be considered for children with an SpO_2 of greater than 92%, as clinically indicated. [2007]

Causes and Incidence of Serious Bacterial Infection

In a child presenting to hospital with a fever and suspected serious bacterial infection, requiring immediate treatment, antibiotics should be directed against *Neisseria meningitidis*, *Streptococcus pneumoniae*, *Escherichia coli*, *Staphylococcus aureus* and *Haemophilus influenzae* type b. A third-generation cephalosporin (for example, cefotaxime or ceftriaxone) is appropriate, until culture results are available. For infants younger than 3 months, an antibiotic active against *listeria* (for example, ampicillin or amoxicillin) should be added. [2007]

Refer to local treatment guidelines when rates of bacterial antibiotic resistance are significant. [2007]

Admission to and Discharge From Hospital

In addition to the child's clinical condition, consider the following factors when deciding whether to admit a child with fever to hospital:

- Social and family circumstances
- Other illnesses that affect the child or other family members
- Parental anxiety and instinct (based on their knowledge of their child)
- Contacts with other people who have serious infectious diseases
- Recent travel abroad to tropical/subtropical areas, or areas with a high risk of endemic infectious disease
- When the parent or carer's concern for their child's current illness has caused them to seek healthcare advice repeatedly
- Where the family has experienced a previous serious illness or death due to feverish illness which has increased their anxiety levels
- When a feverish illness has no obvious cause, but the child remains ill longer than expected for a self-limiting illness [2007]

If it is decided that a child does not need to be admitted to hospital, but no diagnosis has been reached, provide a safety net for parents and carers if any 'red' or 'amber' features are present. The safety net should be 1 or more of the following:

- Providing the parent or carer with verbal and/or written information on warning symptoms and how further healthcare can be accessed (see the section "When to seek further help" below)
- Arranging further follow-up at a specified time and place
- Liaising with other healthcare professionals, including out-of-hours providers, to ensure direct access for the child if further assessment is required [2007]

Children with 'green' features and none of the 'amber' or 'red' features can be cared for at home with appropriate advice for parents and carers, including advice on when to seek further attention from the healthcare services (see the section "Advice for home care" below). [2007, amended 2013]

Referral to Paediatric Intensive Care

Children with fever who are shocked, unrousable or showing signs of meningococcal disease should be urgently reviewed by an experienced paediatrician and consideration given to referral to paediatric intensive care. [2007]

Give parenteral antibiotics to children with suspected meningococcal disease at the earliest opportunity (either benzylpenicillin or a third-generation

cephalosporin). [2007]

Children admitted to hospital with meningococcal disease should be under paediatric care, supervised by a consultant and have their need for inotropes assessed. [2007]

Antipyretic Interventions

Effects of Body Temperature Reduction

Antipyretic agents do not prevent febrile convulsions and should not be used specifically for this purpose. [2007]

Physical Interventions to Reduce Body Temperature

Tepid sponging is not recommended for the treatment of fever. [2007]

Children with fever should not be underdressed or over-wrapped. [2007]

Drug Interventions to Reduce Body Temperature

Consider using either paracetamol or ibuprofen in children with fever who appear distressed. [new 2013]

Do not use antipyretic agents with the sole aim of reducing body temperature in children with fever. [new 2013]

When using paracetamol or ibuprofen in children with fever:

- Continue only as long as the child appears distressed
- Consider changing to the other agent if the child's distress is not alleviated
- Do not give both agents simultaneously
- Only consider alternating these agents if the distress persists or recurs before the next dose is due [new 2013]

Advice for Home Care

Care at Home

Advise parents or carers to manage their child's temperature as described in the section "Antipyretic interventions" above. [2007]

Advise parents or carers looking after a feverish child at home:

- To offer the child regular fluids (where a baby or child is breastfed the most appropriate fluid is breast milk)
- How to detect signs of dehydration by looking for the following features:
    - Sunken fontanelle
    - Dry mouth
    - Sunken eyes
    - Absence of tears
    - Poor overall appearance
- To encourage their child to drink more fluids and consider seeking further advice if they detect signs of dehydration
- How to identify a non-blanching rash
- To check their child during the night
- To keep their child away from nursery or school while the child's fever persists but to notify the school or nursery of the illness [2007]

When to Seek Further Help

Following contact with a healthcare professional, parents and carers who are looking after their feverish child at home should seek further advice if:

- The child has a fit
- The child develops a non-blanching rash
- The parent or carer feels that the child is less well than when they previously sought advice
- The parent or carer is more worried than when they previously sought advice
- The fever lasts longer than 5 days
- The parent or carer is distressed, or concerned that they are unable to look after their child [2007]

Clinical Algorithm(s)

The recommendations from this guideline have been incorporated into a NICE Pathway .

Scope

Disease/Condition(s)

Feverish illnesses, including symptoms and signs suggestive of:

- Meningococcal disease
- Bacterial meningitis
- Herpes simplex encephalitis
- Pneumonia
- Urinary tract infection
- Septic arthritis
- Kawasaki disease

Note: For the purposes of this guideline, fever is defined as "an elevation of body temperature above the normal daily variation."

Guideline Category

Diagnosis

Evaluation

Management

Risk Assessment

Treatment

Clinical Specialty

Emergency Medicine

Family Practice

Infectious Diseases

Pediatrics

Intended Users

Advanced Practice Nurses

Emergency Medical Technicians/Paramedics

Health Care Providers

Hospitals

Nurses

Physician Assistants

Physicians

Guideline Objective(s)

- To update and replace "Feverish illness in children" (National Institute for Health and Care Excellence [NICE] clinical guideline 47)
- To assist healthcare professionals in the initial assessment and immediate treatment of young children with fever presenting to primary or secondary care
- To offer best practice advice on the care of children younger than 5 years with feverish illness

Target Population

Children from birth up to their 5th birthday presenting with a fever that has not been previously diagnosed

Note: The following patient groups are excluded:

Children already admitted to hospital
Children with a pre-existing comorbidity for which fever is already covered by an established management plan by their specialist team; for example, cystic fibrosis, immunosuppression, sickle cell disease and cerebral shunts
Children with recurring fever
Children diagnosed with tropical diseases

Interventions and Practices Considered

Diagnosis/Evaluation/Risk Assessment

1. Detection of fever
    - Measurement in the axilla by electronic or chemical dot thermometer
    - Infrared tympanic thermometer
    - Oral and rectal temperature measurement (not recommended)
    - Subjective detection of fever by parents and carers
2. Clinical assessment
    - Identification of life-threatening features of illness
    - Assessment of risk of serious illness by signs and symptoms ("traffic light" system)
    - Measurement and recording of temperature, heart rate, blood pressure, respiratory rate, capillary refill time
    - Assessment of dehydration
    - Checking for presence of symptoms and signs of specific illnesses (e.g., meningococcal disease, bacterial meningitis, herpes simplex encephalitis, pneumonia, urinary tract infection, septic arthritis, Kawasaki disease)
    - Considering possibility of imported infections

Management/Treatment

1. Management by remote assessment (e.g., telephone assessment) according to risk of serious illness
2. Management by non-paediatric practitioner according to risk of serious illness
3. Management by paediatric specialist, including:
    - Measurement and record of vital signs
    - Lumbar puncture (if indicated)
    - Investigative tests (blood count and culture, C-reactive protein, urine testing)
    - Intravenous fluid bolus
    - Parenteral antibiotic therapy
    - Intravenous aciclovir
    - Oxygen therapy
    - Treatment of suspected serious bacterial infection
    - Admission to and discharge from hospital
    - Referral to paediatric intensive care
4. Antipyretic interventions (paracetamol or ibuprofen)
5. Advice for and care at home

Major Outcomes Considered

- Mortality
- Morbidity, including symptomatic relief of fever and associated symptoms such as discomfort
- Appropriate disposition (e.g., home management or referral to hospital)
- Accuracy of diagnosis of serious illness
- Appropriate use of antibiotics
- Parents and carer satisfaction
- Change in the child's "distress"
- Change in child's temperature
- Adverse events

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Collaborating Centre for Women's and Children's Health (NCC-WCH) on behalf of the National Institute for Health and Care Excellence (NICE) (see the "Availability of Companion Documents" field for the full version of this guidance).

Methodology for the 2013 Update

Developing Review Questions and Protocols and Identifying Evidence

The scope for this update (see Appendix A of the full version of the original guideline document; see the "Availability of Companion Documents" field) identified areas where substantial new evidence was available. The Guideline Development Group (GDG) formulated review questions based on the scope and prepared a protocol for each review (see Appendix D of the full version of the original guideline document). These formed the starting point for systematic reviews of relevant evidence. Published evidence was identified by applying systematic search strategies (see Appendix E of the full version of the original guideline document) to the following databases: Medline (1948 onwards), Embase (1980 onwards), and four Cochrane databases (Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, the Database of Abstracts of Reviews of Effects and the Health Technology Assessment [HTA] database). Searches to identify economic studies were undertaken using the above databases and the National Health Service (NHS) Economic Evaluation Database (NHS EED). Where appropriate, searches were limited by date to capture only studies published after the original guideline. Searches in Medline and Embase were limited to English language and studies in humans. None of the other searches were limited by language of publication (although publications in languages other than English were not reviewed). Search filters were used to identify particular study designs, such as randomised controlled trials (RCTs). There was no searching of grey literature, nor was hand searching of journals undertaken.

All the searches were updated and re-executed within 10 weeks of the start of the stakeholder consultation to ensure the reviews were up-to-date. This process was completed by 1 October 2012.

Methodology for the 2007 Guideline

This methodology applies only to those parts of the guideline that were developed in 2007.

Literature Search Strategy

Initial scoping searches were carried out to identify relevant guidelines (local, national, international) produced by other development groups. The reference lists in these guidelines were checked against subsequent searches to identify missing evidence. Systematic searches to answer the clinical questions formulated and agreed by the GDG were carried out using the following databases via the OVID platform: MEDLINE (1966 onwards), Embase (1980 onwards), Cumulative Index to Nursing and Allied Health Literature (1982 onwards) and PsycINFO (1967 onwards). The most recent search conducted for the three Cochrane databases (Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic

Reviews, and the Database of Abstracts of Reviews of Effects) was Quarter 3, 2006. Searches to identify economic studies were undertaken using the above databases and the NHS Economic Evaluations Database (NHS-EED).

Refer to the full version of the original guideline document for additional details concerning the 2007 literature search strategy.

Number of Source Documents

2013 Guideline Update

The number of studies identified for each clinical question is provided in Appendix F of the full guideline document (see the "Availability of Companion Documents" field).

2007 Guideline

The search identified 3,151 prognostic studies. After filtering double references, 300 different abstracts were screened for inclusion.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Rating Scheme for the 2013 Guideline Update

Overall Quality of Outcome Evidence in Grading of Recommendations Assessment, Development and Evaluation (GRADE)

Level	Description
High	Further research is very unlikely to change confidence in the estimate of effect
Moderate	Further research is likely to have an important impact on confidence in the estimate of effect and may change the estimate
Low	Further research is very likely to have an important impact on confidence in the estimate of effect and is likely to change the estimate
Very low	Any estimate of effect is very uncertain

Rating Schemes for the 2007 Guideline

Levels of Evidence for Intervention Studies

1++ High-quality meta-analyses, systematic reviews of randomised controlled trials (RCTs) or RCTs with a very low risk of bias

1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias

1- Meta-analyses, systematic reviews of RCTs or RCTs with a high risk of bias

2++ High-quality systematic reviews of case–control or cohort studies; high-quality case–control or cohort studies with a very low risk of confounding, bias or chance and a high probability that the relationship is causal

2+ Well-conducted case–control or cohort studies with a low risk of confounding, bias or chance and a moderate probability that the relationship is causal

2- Case–control or cohort studies with a high risk of confounding, bias or chance and a significant risk that the relationship is not causal

3 Non-analytical studies (for example case reports, case series)

4 Expert opinion, formal consensus

Levels of Evidence for Studies of the Accuracy of Diagnostics Tests

Ia Systematic reviews (with homogeneity)[a] of level-1 studies[b]

Ib Level-1 studies[b]

II Level-2 studies[c]; systematic reviews of level-2 studies

III Level-3 studies[d]; systematic reviews of level-3 studies

IV Consensus, expert committee reports or opinions and/or clinical experience without explicit critical appraisal; or based on physiology, bench research or 'first principles'

[a] Homogeneity means there are no or minor variations in the directions and degrees of results between individual studies that are included in the systematic review.

[b] Level-1 studies are studies that use a blind comparison of the test with a validated reference standard (gold standard) in a sample of patients that reflects the population to whom the test would apply.

[c] Level-2 studies are studies that have only one of the following:

- Narrow population (the sample does not reflect the population to whom the test would apply)
- Use a poor reference standard (defined as that where the 'test' is included in the 'reference', or where the 'testing' affects the 'reference')
- The comparison between the test and reference standard is not blind
- Case–control studies

[d] Level-3 studies are studies that have at least two or three of the features listed above.

Methods Used to Analyze the Evidence

Meta-Analysis

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Note from the National Guideline Clearinghouse (NGC): This guideline was developed by the National Collaborating Centre for Women's and Children's Health (NCC-WCH) on behalf of the National Institute for Health and Care Excellence (NICE) (see the "Availability of Companion Documents" field for the full version of this guidance).

Methodology for the 2013 Update

Reviewing and Synthesising Evidence

Evidence relating to clinical effectiveness was reviewed and synthesised according to the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach. In the GRADE approach, the quality of the evidence identified for each outcome listed in the review protocol is assessed according to the factors listed below, and an overall quality rating (high, moderate, low or very low) is assigned by combining the ratings for the individual factors.

- Study design (as an indicator of intrinsic bias; this determines the initial quality rating).
- Limitations in the design or execution of the study (including concealment of allocation, blinding, loss to follow up; these can reduce the quality rating).
- Inconsistency of effects across studies (this can reduce the quality rating).
- Indirectness (the extent to which the available evidence fails to address the specific review question; this can reduce the quality rating).
- Imprecision (reflects the confidence in the estimate of effect and this can reduce the quality rating). For continuous variables (such as change in temperature) the Guideline Development Group (GDG) was asked to predefine minimally important differences (the smallest difference between treatments that health professionals or patients think is clinically beneficial). However, the GDG was unable to agree these so imprecision was graded based on statistical differences.
- Other considerations (including large magnitude of effect, evidence of a dose–response relationship, or confounding variables likely to have reduced the magnitude of an effect; these can increase the quality rating in observational studies, provided no downgrading for other features

has occurred).

The type of review question determines the highest level of evidence. For questions on therapy or treatment, the highest possible evidence level is a well-conducted systematic review or meta-analysis of randomised controlled trials (RCTs), or an individual RCT. In the GRADE approach, a body of evidence based entirely on such studies has an initial quality rating of high, and this may be downgraded to moderate, low or very low if factors listed above are not addressed adequately. For questions on prognosis, the highest possible level of evidence is a controlled observational study (a cohort study or case–control study), and a body of evidence based on such studies would have an initial quality rating of high, which might be downgraded to moderate, low or very low, depending on the factors listed above. For diagnostic tests, studies examining the performance of the test were used if information on accuracy was required, but where an evaluation of the effectiveness of the test in the clinical management of the condition was required, evidence from RCTs or cohort studies was considered optimal. For studies evaluating the accuracy of a diagnostic test, summary statistics (sensitivity, specificity, positive predictive value [PPV], negative predictive value [NPV] and likelihood ratios (LR) for positive and negative test results [LR+ and LR–, respectively]) were calculated or quoted where possible (see Table 3.1 in the full version of the original guideline document). The following definitions were used when summarising the likelihood ratios for the GDG:

- Convincing: positive likelihood ratio (LR+) 10 or higher, negative likelihood ratio (LR-) 0.1 or lower
- Strong: LR+ 5 or higher (but less than 10), LR- 0.2 or lower (but higher than 0.1)
- Not strong: LR+ 4.9 or lower, LR- higher than 0.2

The following definitions were used when summarising the levels of sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) for the GDG:

- High: 90% and above
- Moderate: 75% to 89%
- Low: 74% or below

All diagnostic outcomes (likelihood ratios, sensitivity, specificity and predictive values) were considered when discussing the evidence. However, particular emphasis was placed on the positive likelihood ratio, with a ratio of 5 or higher being considered a good indicator that a symptom or sign should be presented in the red column of the traffic light table.

For each review question the highest available level of evidence was sought. Where appropriate, for example if a systematic review, meta-analysis or RCT was identified to answer a question directly, studies of a weaker design were not considered. Where systematic reviews, meta-analyses and RCTs were not identified, other appropriate experimental or observational studies were sought.

The GRADE system described above covers studies of treatment effectiveness. However, it is less well established for studies reporting accuracy of diagnostic tests or prognostic factors. For such studies, NICE recommends using the Quality Assessment of Studies of Diagnostic Accuracy (QUADAS) methodology checklist or the NICE prognostic study checklist, respectively, to assess study quality (see the NICE *Guidelines Manual*; see "Availability of Companion Documents" field). These were then mapped onto the GRADE system.

Some studies were excluded from the guideline reviews after obtaining copies of the publications because they did not meet inclusion criteria specified by the GDG (see Appendix G of the full version of the original guideline document; see the "Availability of Companion Documents" field). The characteristics of each included study were summarised in evidence tables for each review question (see Appendix H of the full version of the original guideline document). Where possible, dichotomous outcomes were presented as relative risks (RRs) or odds ratios (ORs) with 95% confidence intervals (CIs), and continuous outcomes were presented as mean differences with 95% CIs or standard deviations (SDs).

The body of evidence identified for each therapy or treatment review question (or part of a review question) was presented in the form of a GRADE evidence profile summarising the quality of the evidence and the findings (pooled relative and absolute effect sizes and associated CIs).

Where appropriate, the body of evidence corresponding to each outcome specified in the review protocol was subjected to quantitative meta-analysis. In such cases, pooled effect sizes were presented as pooled risk ratios (RRs), pooled ORs or weighted mean differences. By default, meta-analyses were conducted by fitting fixed effects models, but where statistically significant heterogeneity was identified, random effects models were used to investigate the impact of the heterogeneity. As Review Manager does not support formal meta-analysis of diagnostic studies this was undertaken using the Stata® software package using the METANDI and MIDAS commands.

Where quantitative meta-analysis could not be undertaken (for example because of heterogeneity in the included studies) the range of effect sizes reported in the included studies was presented. The GRADE evidence profiles are not directly applicable to epidemiological studies or non-comparative cohort studies. Where these studies are presented, they are included in descriptive paragraphs and/or tables as appropriate.

Identification of Serious Illness

The following serious illnesses were identified as being the main focus of the diagnostic reviews:

- Bacterial meningitis
- Meningococcal septicaemia
- Bacteraemia
- Pneumonia
- Urinary tract infection
- Encephalitis (herpes simplex)
- Septic arthritis/osteomyelitis
- Kawasaki disease

Outcome Measures

For this guideline update, the review questions were judged on a number of outcomes. The justification for using these outcomes was based on their relevance to the groups covered by the guideline and consensus among members of the GDG. Outcomes include those that were felt to be desirable (for example early detection of serious illness) and unwanted effects of treatment that it would be important to reduce to a minimum. When assessing the accuracy of a test or the effectiveness of a particular treatment, appropriate information about the effect on one or more primary outcomes was sought.

Incorporating Health Economics

The aims of the health economic input to the guideline were to inform the GDG of new economic issues relating to fever in children, and to consider whether the recommendations continued to represent a cost-effective use of healthcare resources. Health economic evaluations aim to integrate data on benefits (ideally in terms of quality adjusted life years [QALYs]), harms and costs of different care options.

Systematic searches for published economic evidence were undertaken for all clinical questions in the guideline update. For economic evaluations, no standard system of grading the quality of evidence exists and included papers were assessed using a quality assessment checklist based on good practice in economic evaluation. Reviews of the relevant published health economic literature identified in the literature search are presented alongside the clinical effectiveness reviews.

The GDG prioritised a number of review questions where it was thought that economic considerations would be particularly important in formulating recommendations. The plan was to provide additional health economic analyses where data were available and health economic analysis was warranted as part of the development process. Cost effectiveness analysis can be useful where there are alternative clinical strategies, one or more of which is associated with potentially higher costs and evidence of improved effectiveness. For this guideline the areas prioritised for economic analysis were:

- The predictive value of pro-calcitonin and/or C reactive protein markers
- The efficacy of paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs) alone and in combination in reducing fever
- Whether reducing fever with paracetamol or NSAIDs affects the course of the illness.

Methodology for the 2007 Guideline

This methodology applies only to those parts of the guideline that were developed in 2007.

Synthesis of Clinical Effectiveness Evidence

The 2005 NICE Guidelines Manual was largely abided by. However, because this is a symptom-based guideline with un-established methodology, the methodology used is stated where it was not covered in the NICE Guidelines Manual. Evidence relating to clinical effectiveness was reviewed using established guides and classified using the established hierarchical system for intervention studies shown in the "Rating Scheme for the Strength of the Evidence" field. This system covers studies of treatment effectiveness. However, it is less appropriate for studies reporting diagnostic tests of accuracy. In the absence of a validated hierarchy for this type of test, NICE suggests levels of evidence that take into account the factors likely to affect the validity of these studies (see the Rating Scheme for the Strength of the Evidence" field).

Prognostic Studies

A substantial part of the evidence for this guideline was derived from prognostic studies. It is worth noting that there is very limited research on prognostic studies and on methods for assessing their quality. The 2005 version of the NICE *Guidelines Manual* contains virtually no advice on how to assess such studies. These limitations were recognised from the outset and the NICE methodology was adapted to account for these deficiencies, as outlined in the "Rating Scheme for the Strength of the Evidence" field.

Refer to the full version of the original guideline document for additional information on 2007 guideline methodology.

Health Economics

Apart from the review of the literature, additional health economic analysis was undertaken for specific questions in the guideline which the GDG identified as requiring economic evaluation. Specifically, health economic analysis was undertaken on the cost of thermometers, and the cost-effectiveness of specific investigations in specialist care (C-reactive protein versus procalcitonin). Additional economic models were developed to assess the impact of changing the pattern of referrals to secondary care but the lack of data prevented any meaningful analysis and conclusions to be drawn from this.

For the analysis that was undertaken, clinical data reported in the guideline were used, and UK cost data were collected. The perspective adopted is the National Health Service (NHS) and cost data are reported for 2005/06. Health economic analysis carried out as part of the guideline development is presented within the relevant clinical chapter, with readers being referred forward to appendices which provide more detailed explanation of methods and results. Health economic statements are made in the guideline in sections where the use of NHS resources is considered.

Methods Used to Formulate the Recommendations

Expert Consensus

Expert Consensus (Delphi)

Informal Consensus

Description of Methods Used to Formulate the Recommendations

Methodology for the 2013 Guideline Update

Evidence to Recommendations

Recommendations for clinical care were derived using, and linked explicitly to, the evidence that supported them. In the first instance, informal consensus methods were used by the Guideline Development Group (GDG) to agree short clinical and, where appropriate, cost-effectiveness evidence statements which were presented alongside the evidence profiles. Statements summarising the GDGs interpretation of the evidence and any extrapolation from the evidence used when making recommendations were also written to ensure transparency in the decision-making process. The criteria used in moving from evidence to recommendations were:

- Relative value placed on the outcomes considered
- Consideration of clinical benefits and harms consideration of net health benefits and resource use
- Quality of the evidence
- Other considerations (including equalities issues)

The GDG also identified areas where evidence to answer its review questions was lacking and used this information to formulate recommendations for future research.

Towards the end of the guideline development process, formal consensus methods were used to consider all the clinical care recommendations and research recommendations that had been drafted. The GDG identified 10 'key priorities for implementation' (key recommendations) and 5 high-priority research recommendations. The key priorities for implementation were those recommendations thought likely to have the greatest impact on clinical care and outcomes in the National Health Service (NHS) as a whole; they were selected using a variant of the nominal group technique (see the 2009 NICE Guidelines Manual; see the "Availability of Companion Documents" field). The priority research recommendations were selected in a similar way.

Methodology for the 2007 Guideline

Delphi Consensus

In areas where important clinical questions were identified but no substantial evidence existed, a two-round Delphi consensus method was used to derive recommendations that involved the participation of over 50 clinicians, parents and carers from appropriate stakeholder organisations. Full details of the consensus process are presented in Appendix A of the full version of the original guideline document (see the "Availability of

Companion Documents" field).

Forming Recommendations

For each clinical question, the recommendations were derived from the evidence statements presented to the GDG as summaries from the studies reviewed. The link between the evidence statements and recommendation were made explicit in the translation of the evidence statement. The GDG agreed the final recommendation through informal consensus. In the first instance, informal consensus methods were used by the GDG to agree evidence statements and recommendations.

Additionally, in areas where important clinical questions were identified but no substantial evidence existed, formal consensus methods were used to identify current best practice (see the section above). Shortly before the consultation period, five to ten key priorities were selected using a nominal group technique for implementation (details available at the National Collaborating Centre for Women's and Children's Health [NCC-WCH]). To avoid giving the impression that higher grade recommendations are of higher priority for implementation, NICE no longer assigns grades to recommendations.

Rating Scheme for the Strength of the Recommendations

Not applicable

Cost Analysis

Reviews of the relevant published health economic literature identified in the literature search are presented alongside the clinical effectiveness reviews in the full version of the original guideline document (see the "Availability of Companion Documents" field). In addition, refer to Chapter 11 in the full version of the original guideline document for information on these health economics topics:

- Cost analysis of thermometers for use in children and infants with fever
- Economics of referral to a specialist paediatric team of a child with fever without source – analysis undertaken for the 2007 guideline
- Economic evaluation of C-reactive protein versus procalcitonin – analysis undertaken for the 2007 guideline
- Hour time limit for an urgent face-to-face consultation following remote assessment: Guideline Development Group (GDG) reasoning and justification in the absence of data to inform a formal economic analysis – analysis undertaken for the 2007 guideline

Method of Guideline Validation

External Peer Review

Description of Method of Guideline Validation

Stakeholder Involvement (2012 Guideline Update)

Registered stakeholder organisations were invited to comment on the draft scope and the draft guideline. The Guideline Development Group (GDG) carefully considered and responded to all comments received from stakeholder organisations. The comments and responses were reviewed by the National Institute for Health and Care Excellence (NICE) in accordance with the NICE guideline development process.

External Review (2007 Guideline)

This guideline has been developed in accordance with NICE guideline development process. This has included giving registered stakeholder organisations the opportunity to comment on the scope of the guideline at the initial stage of development and on the evidence and recommendations at the concluding stage. This involved reviewing by 2 independent reviewers as part of NICE's external expert review process for its guidelines. The developers have carefully considered all of the comments during the stage of the consultation by registered stakeholders and expert external reviewers and validation by NICE.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of evidence supporting the recommendations is not specifically stated.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate assessment and initial management of feverish illness in children younger than 5 years

Potential Harms

Adverse Effects of Treatment

- Antibiotics have adverse effects, commonly rash and diarrhoea but also severe reactions such as allergy, anaphylaxis and Stevens–Johnson syndrome.
- The use of antipyretics to reduce fever could have an adverse effect on overall outcome; specifically, studies on adult patients in intensive care units have shown higher mortality rates associated with use of antipyretics and a study of vaccination in children has shown that antibody production is inhibited when antipyretics were used to prevent post-vaccination fever.

Qualifying Statements

Qualifying Statements

- This guidance represents the view of the National Institute for Health and Care Excellence (NICE), which was arrived at after careful consideration of the evidence available. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. However, the guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer, and informed by the summaries of product characteristics of any drugs.
- Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity and foster good relations. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties.
- The guideline will assume that prescribers will use a drug's summary of product characteristics to inform decisions made with individual patients.
- Patients and healthcare professionals have rights and responsibilities as set out in the National Health Service (NHS) Constitution for England – all NICE guidance is written to reflect these. Treatment and care should take into account individual needs and preferences. Patients should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. If someone does not have the capacity to make decisions, healthcare professionals should follow the Department of Health's advice on consent, the code of practice that accompanies the Mental Capacity Act and the supplementary code of practice on deprivation of liberty safeguards. In Wales, healthcare professionals should follow advice on consent from the Welsh Government.
- For all recommendations, NICE expects that there is discussion with the patient about the risks and benefits of the interventions, and their values and preferences. This discussion aims to help them to reach a fully informed decision (see also Patient-centred care).
- If the patient is under 16, healthcare professionals should follow the guidelines in the Department of Health's Seeking consent: working with children. Families and carers should also be given the information and support they need to help the child or young person in making decisions about their treatment.

Implementation of the Guideline

Description of Implementation Strategy

The National Institute for Health and Care Excellence (NICE) has developed tools to help organisations implement this guidance (listed below). These are available on the NICE website (http://guidance.nice.org.uk/CG160).

Key Priorities for Implementation

The following recommendations have been identified as priorities for implementation.

Thermometers and the Detection of Fever

In children aged 4 weeks to 5 years, measure body temperature by one of the following methods:

- Electronic thermometer in the axilla
- Chemical dot thermometer in the axilla
- Infra-red tympanic thermometer. [2007]

Reported parental perception of a fever should be considered valid and taken seriously by healthcare professionals. [2007]

Clinical Assessment of Children with Fever

Assess children with feverish illness for the presence or absence of symptoms and signs that can be used to predict the risk of serious illness using the traffic light system (see Table 1 in the "Major Recommendations" field). [2013]

Measure and record temperature, heart rate, respiratory rate and capillary refill time as part of the routine assessment of a child with fever. [2007]

Recognise that children with tachycardia are in at least an intermediate-risk group for serious illness. Use the Advanced Paediatric Life Support (APLS) criteria below to define tachycardia: [2013]

Age	Heart Rate (beats per minute)
<12 months	>160
12–24 months	>150
2–5 years	>140

Management by Remote Assessment

Children with any 'red' features but who are not considered to have an immediately life-threatening illness should be urgently assessed by a healthcare professional in a face-to-face setting within 2 hours. [2007]

Management by the Non-Paediatric Practitioner

If any 'amber' features are present and no diagnosis has been reached, provide parents or carers with a 'safety net' or refer to specialist paediatric care for further assessment. The safety net should be 1 or more of the following:

- Providing the parent or carer with verbal and/or written information on warning symptoms and how further healthcare can be accessed (see "When to Seek Further Help" section in the "Major Recommendations" field)
- Arranging further follow-up at a specified time and place
- Liaising with other healthcare professionals, including out-of-hours providers, to ensure direct access for the child if further assessment is required. [2007]

Management by the Paediatric Specialist

Perform the following investigations in infants younger than 3 months with fever:

- Full blood count
- Blood culture
- C-reactive protein
- Urine testing for urinary tract infection (see the NICE guideline, Urinary tract infection in children [NICE clinical guideline 54])

- Chest X-ray only if respiratory signs are present
- Stool culture, if diarrhoea is present [2013]

Antipyretic Interventions

Antipyretic agents do not prevent febrile convulsions and should not be used specifically for this purpose. [2007]

When using paracetamol or ibuprofen in children with fever:

- Continue only as long as the child appears distressed
- Consider changing to the other agent if the child's distress is not alleviated
- Do not give both agents simultaneously
- Only consider alternating these agents if the distress persists or recurs before the next dose is due. [2013]

Implementation Tools

Audit Criteria/Indicators

Clinical Algorithm

Patient Resources

Resources

Slide Presentation

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

National Collaborating Centre for Women's and Children's Health. Feverish illness in children: assessment and initial management in children younger than 5 years. London (UK): National Institute for Health and Care Excellence (NICE); 2013 May. 43 p. (Clinical guideline; no. 160).

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2007 May (revised 2013 May)

Guideline Developer(s)

National Guideline Alliance - National Government Agency [Non-U.S.]

Source(s) of Funding

National Institute for Health and Care Excellence (NICE)

Guideline Committee

Guideline Development Group

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

All Guideline Development Group (GDG) members' interests were recorded on declaration forms provided by the National Institute for Health and Care Excellence (NICE). The form covered consultancies, fee-paid work, shareholdings, fellowships and support from the healthcare industry. GDG members' interests are listed in Appendix C of the full version of the original guideline document (see the "Availability of Companion Documents" field). No material conflicts of interest were identified. Appendix C includes all interests declared on or before 15 March 2013.

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: National Collaborating Centre for Women's and Children's Health. Feverish illness in children: assessment and initial management in children younger than 5 years. London (UK): National Institute for Health and Clinical Excellence (NICE); 2007 May. 142 p. (Clinical guideline; no. 47). [289 references]

Guideline Availability

Electronic copies: Available from the National Institute for Health and Care Excellence (NICE) Web site .

Availability of Companion Documents

The following are available:

- Feverish illness in children: assessment and initial management in children younger than 5 years. Full guideline. London (UK): National

Institute for Health and Care Excellence (NICE); 2013 May. 310 p. (Clinical guideline; no. 160). Electronic copies: Available from the National Institute for Health and Care Excellence (NICE) Web site .

- Feverish illness in children: assessment and initial management in children younger than 5 years. Appendices A – L. London (UK): National Institute for Health and Care Excellence (NICE); 2013 May. 627 p. (Clinical guideline; no. 160). Electronic copies: Available from the NICE Web site .
- Feverish illness in children: assessment and initial management in children younger than 5 years. Appendix H. Evidence Tables. London (UK): National Institute for Health and Care Excellence (NICE); 2013 May. 552 p. (Clinical guideline; no. 160). Electronic copies: Available from the NICE Web site .
- Feverish illness in children: assessment and initial management in children younger than 5 years. Baseline assessment tool. London (UK): National Institute for Health and Care Excellence; 2013 May. (Clinical guideline; no. 160). Electronic copies: Available from the NICE Web site .
- Feverish illness in children: assessment and initial management in children younger than 5 years. Clinical case scenario. London (UK): National Institute for Health and Care Excellence; 2013 May. (Clinical guideline; no. 160). Electronic copies: Available from the NICE Web site. .
- Feverish illness in children: assessment and initial management in children younger than 5 years. Clinical audit tools. London (UK): National Institute for Health and Care Excellence; 2013 May. (Clinical guideline; no. 160). Electronic copies: Available from the NICE Web site .
- Feverish illness in children: assessment and initial management in children younger than 5 years. Costing statement. London (UK): National Institute for Health and Care Excellence; 2013 May. 5 p. (Clinical guideline; no. 160). Electronic copies: Available from the NICE Web site .
- Feverish illness in children: slide set. London (UK): National Institute for Health and Care Excellence; 2013 May. 17 p. (Clinical guideline; no. 160). Electronic copies: Available from the NICE Web site .
- Spotting the sick child (DH). Online learning resource. London (UK): National Institute for Health and Care Excellence; 2013 May. (Clinical guideline; no. 160). Electronic copies: Available from the NICE Web site .
- Feverish illness in children: assessment and initial management in children younger than 5 years. Support for education and learning: educational resource - traffic light table. London (UK): National Institute for Health and Care Excellence; 2013 May. 1 p. (Clinical guideline; no. 160). Electronic copies: Available from the NICE Web site .
- Feverish illness in children: overview. NICE pathway. (UK): National Institute for Health and Care Excellence (NICE); 2013 May. (Clinical guideline; no. 160). Electronic copies: Available from the NICE Web site .

Patient Resources

The following is available:

- Feverish illness in children. Information for the public. National Institute for Care Excellence (NICE); 2013 May. Electronic copies: Available from the National Institute for Health and Care Excellence (NICE) Web site . Also available for download in ePub and eBook formats from the NICE Web site . Also available in Welsh from the NICE Web site .

NGC Status

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